

**IN THE UNITED STATES PATENT AND TRADEMARKS OFFICE**

In The Matter of Patent Application:

First Named Inventor : Hamid Ould-Brahim  
Serial No. : 10/747,967  
Filing Date : December 29, 2003  
Title : APPARATUS AND METHOD FOR MULTIHOP  
MPLS/IP/ATM/FRAME RELAY/ETHERNET  
PSEUDO-WIRE  
Examiner : SILVER, DAVID  
Art Unit : 2128  
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**APPELLANT'S BRIEF ON APPEAL**

Dear Sir:

This Appeal Brief is submitted further to the Notice of Appeal From The Examiner To The Board Of Patent Appeals And Interferences filed June 24, 2008. The Applicant respectfully submits that this Appeal Brief complies with all requirements of 37 C.F.R. 41.37.

The fee for filing this Appeal Brief is submitted herewith. In the Applicant's respectful submission, no other fees are due in connection with the filing of this Appeal Brief. If the Applicant is mistaken, the Commissioner is hereby authorized to deduct any fees required, and, in particular, any extension of time fees, from deposit account No. 13-2400.

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(i) Real party in interest

The real party in interest is Nortel Networks Limited, 2351 Boulevard Alfred-Nobel, St. Laurent, Quebec, H4S 2A9, Canada. Nortel Networks Limited is the Assignee of the entire right, title and interest in the subject application, by virtue of an Assignment recorded on 12/29/2003 on Reel 014864 at Frame 0485.

(ii) Related appeals and interferences

Appellant, the undersigned Agent, and Assignee are not aware of any related appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(iii) Status of claims

Claims 21-22 remain pending in the application. Claims 1-20, as originally filed, were cancelled and claims 21 and 22 were introduced as new claims in a response to an Office Action dated August 24, 2006. Amendments to Claims 21 and 22 were entered as part of a Request for Continued Examination dated June 5, 2007. Claims 21 and 22 have each been rejected. A copy of the pending claims as they currently stand finally rejected is attached as the Claims Appendix.

(iv) Status of amendments

No amendments have been filed or entered subsequent to the final Office Action of January 24, 2008.

(v) Summary of claimed subject matter

Claim 21 is an independent claim to an intermediate node (item 44 in FIG. 2) in a multihop pseudo-wire (i.e., that which connects the provider edge device 36 to the provider edge device 40 in FIG. 2, see paragraph [0046]). A multihop pseudo-wire may include a first pseudo-wire segment (item 100 in FIG. 3A) and a second pseudo-wire segment (item 102 in FIG. 3A). The intermediate node includes a forwarder (item 84 in FIG. 3A) for terminating the first pseudo-wire segment (item 100 in FIG. 3A) of the multihop pseudo-wire. A description of the first pseudo-wire segment (item 100 in FIG. 3A) includes, as a target, an attachment individual identifier associated with the forwarder (see paragraphs [0052] and [0063]). The forwarder (item 84 in FIG. 3A) is also for originating the second pseudo-wire segment (item 102 in FIG. 3A) of the multihop pseudo-wire. A description of the second pseudo-wire segment (item 102 in FIG. 3A) includes, as a source, the attachment individual identifier associated with the forwarder (see paragraphs [0052] and [0063]).

Claim 22 is an independent claim to an intermediate node (item 164 in FIG. 5) in a multihop pseudo-wire (i.e., that which connects the provider edge device 190 to the provider edge device 194 in FIG. 5, see paragraph [0063]). A multihop pseudo-wire may include a first pseudo-wire segment (item 174 in FIG. 5) and a second pseudo-wire segment (item 182 in FIG. 5). The intermediate node includes a first forwarder (item 168 in FIG. 5) for terminating the first pseudo-wire segment (item 174 in FIG. 5) of the multihop pseudo-wire. A description of the first pseudo-wire segment

(item 174 in FIG. 5) includes, as a target, an attachment individual identifier associated with the first forwarder (see paragraph [0063]). The intermediate node also includes a second forwarder (item 170 in FIG. 5) for originating the second pseudo-wire segment (item 182 in FIG. 5) of the multihop pseudo-wire. A description of the second pseudo-wire segment (item 182 in FIG. 5) includes, as a source, an attachment individual identifier associated with the second forwarder (see paragraph [0063]).

(vi) Grounds of rejection to be reviewed on appeal

## **Issues**

The following issues are on appeal:

Whether claims 21 and 22 are properly rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter.

Whether claims 21 and 22 are properly rejected under 35 U.S.C. §102(e) as anticipated by US Patent Application No. 2004/0037279 to Zelig et al. (hereinafter "Zelig").

Whether claims 21 and 22 are properly rejected under 35 U.S.C. §102(b) as anticipated by US Patent 5,473,599 to Li, et al. (hereinafter "Li").

Claims 21 and 22 are on appeal.

(vii) Argument

**Overview of Claimed Invention**

The claimed invention relates to emulating services over networks and, in particular, emulating services over multihop pseudo-wire. Two provider edge devices are located at opposite ends of a signal transmission path. An intermediate node is located along the signal transmission path and this intermediate node divides the signal transmission path into a first path segment and a second path segment. A forwarder at the intermediate node terminates the first path segment. The same forwarder (claim 21) or another forwarder (claim 22) originates the second path segment.

**Overview of Primary Cited Art**

Zelig discloses a method for data broadcast over a network includes receiving at a virtual bridge a data packet to be flooded over the network, and passing the data packet from the virtual bridge to a multicast-capable router, along with a broadcast indication. Responsive to the broadcast indication, the router determines a group of destination addresses to which the packet should be multicast, and creates copies of the packet for transmission over the network to the destination addresses in the group.

Li discloses a system and protocol for routing data packets from a host on a LAN through a virtual address belonging to a group of routers. The host is configured to point to the virtual address so that the packets the host sends out of its LAN are always directed to a virtual router which may be any one of the group of routers. An

active router in the group of routers emulates the virtual router. A standby router, also from the group of routers, backs up the active router so that if the active router becomes inoperative, the standby router automatically begins emulating the virtual router. The host router does not know which router from the group is actually handling the data packets it sends. If the standby router becomes inoperative or takes over for the active router, other routers in the group hold an election to determine which of them should take over for the standby router.

### ***Argument Regarding Rejections***

#### *Claim 21*

The Examiner has rejected claim 21 under 35 U.S.C. §101 as being directed to non-statutory subject matter. In particular, the Examiner has indicated that claim 21 is directed to software, per se.

The Applicant submits that claim 21 is directed to an "intermediate node" comprising a "forwarder" and is, accordingly, directed to hardware. The Examiner has previously rebutted the Applicant's submission by indicating that paragraph [0002] of the published application discusses that emulation can occur in hardware or software. The Examiner appears to have inappropriately associated "emulation" with the claimed intermediate node and, in particular, the forwarder. The Applicant submits that there is no disclosure of "emulation" occurring at an intermediate node or, more particularly, at a forwarder of an intermediate node. Indeed, paragraph [0032] of the application discloses that emulation involves encapsulation ahead of transmission over a pseudo-

wire. It follows that emulation, i.e., provision of a first service (say, layer-2 VPN) over a network of a second service (say, IP/MPLS), may be seen to occur only at the origin node (and perhaps at the termination node) of a pseudo-wire, that is, not at an intermediate node.

Further to the Examiner's indication that a forwarder as described in claim 21 could be modeled in software, the Applicant submits that modeling hardware in software does not negate patentability. Indeed, a novel and non-obvious circuit of transistors, resistors, inductors and capacitors may easily be modelled in software without negating the patentability of the circuit.

When the Applicant argued, in the telephone interview of April 10, 2008, that the claims are not software because each of the claims is directed to a node, the Examiner indicated that the preamble was not given patentable weight in the 35 U.S.C. §101 assessment. The Applicant respectfully submits that the preamble should be given patentable weight in the 35 U.S.C. §101 assessment. For support of this submission, the Applicant cites a passage from M.P.E.P. 2111.02(I), "Any terminology in the preamble that limits the structure of the claimed invention must be treated as a claim limitation."

Applicant submits that the Examiner has erred in rejecting, as being directed to non-statutory subject matter, claim 21.

The Examiner has rejected claim 21 under 35 U.S.C. §102(e) as



anticipated by Zelig.

According to Chapter 2131 of the M.P.E.P., to anticipate a claim under 35 U.S.C § 102, "the reference must teach every element of the claim." Applicant submits that Zelig does not disclose each and every element recited in claim 21. Accordingly, Zelig cannot anticipate claim 21. More specifically, The Applicant submits that the pseudo wires discussed in Zelig are point-to-point and "full mesh" (see paragraphs [0017], [0049], [0050], [0064]) and that multihop pseudo wires are not considered by Zelig. Further, the elements of the reference must be arranged as claimed. Anticipation is a strict standard and the Patent Office has not satisfied its burden in the present application.

The Examiner cites the forwarding engine 34 in FIG. 2 of Zelig as anticipating the forwarder of claim 21. Assuming that this was true, the virtual bridge 24 in FIGS. 1 and 2 of Zelig could be substituted for intermediate node 134 in FIG. 4 of the present application. The Applicant submits that the forwarding engine 34 of the virtual bridge 24 would merely terminate pseudo-wire segment 142. That is, the Applicant submits that the forwarding engine 34 of the virtual bridge 24 would not originate pseudo-wire segment 146, as required by claim 21. The Applicant also submits that Zelig provides no disclosure to suggest that the forwarding engine 34 of the virtual bridge 24 would appropriately interpret the description of the first pseudo-wire segment including, as a target, an attachment individual identifier.

Since, the Applicant submits, Zelig does not disclose or suggest

terminating a first segment of a multihop pseudo-wire and originating a second segment of the same multihop pseudo-wire, as required by claim 21, then Zelig cannot anticipate an intermediate node in a multihop pseudo-wire having the functional limitations recited in claim 21. Applicant submits that the Examiner has erred in rejecting, as anticipated by Zelig, claim 21.

The Examiner has rejected claim 21 under 35 U.S.C. §102(b) as anticipated by Li.

To reject claim 21, the Examiner has cited col. 8, line 19-23 of Li:

It should also be recognized that the protocol of this invention can in some circumstances be used to emulate virtual bridges (as opposed to virtual routers). For example, SRB ("source routing bridging") is a protocol allowing for multiple bridges operating in parallel.

The Examiner has also cited col. 2, line 16-30 of Li:

The present invention provides a system and protocol for routing data packets from a host on a LAN through a virtual router. The host is configured so that the packets it sends to destinations outside of its LAN are always addressed to the virtual router. The virtual router may be any physical router elected from among a "standby group" of routers connected to the LAN. The router from the standby group that is currently emulating the virtual router is referred to as the "active" router. Thus, packets addressed to the virtual router are handled by the active router. A "standby" router, also from the group of routers, backs up the active router so that if the active router becomes inoperative, the standby router automatically begins emulating the virtual router. This allows the host to always direct data packets to an operational router without monitoring the routers of the network.

The Applicant submits that the Examiner has not appropriately indicated where Li has disclosed or suggested a node comprising a forwarder for terminating a first segment of a multihop pseudo-wire as required by claim 21. Similarly, the Examiner has not appropriately indicated where Li has disclosed or suggested a node comprising a forwarder for originating a second segment of a multihop pseudo-wire as required by

claim 21. Applicant submits that the Examiner has erred in rejecting, as anticipated by Li, claim 21.

*Claim 22*

The Examiner has rejected claim 22 under 35 U.S.C. §101 as being directed to non-statutory subject matter. In particular, the Examiner has indicated that claim 22 is directed to software, per se.

The Applicant submits that claim 22 is directed to an "intermediate node" comprising a "first forwarder" and a "second forwarder" and is, accordingly, directed to hardware. The Examiner has previously rebutted the Applicant's submission by indicating that paragraph [0002] of the published application discusses that emulation can occur in hardware or software. The Examiner appears to have inappropriately associated "emulation" with the claimed intermediate node and, in particular, the forwarder. The Applicant submits that there is no disclosure of "emulation" occurring at an intermediate node or, more particularly, at a forwarder of an intermediate node. Indeed, paragraph [0032] of the application discloses that emulation involves encapsulation ahead of transmission over a pseudo-wire. It follows that emulation, i.e., provision of a first service (say, layer-2 VPN) over a network of a second service (say, IP/MPLS), may be seen to occur only at the origin node (and perhaps at the termination node) of a pseudo-wire, that is, not at an intermediate node.

Further to the Examiner's indication that the two forwarders as described

in claim 22 could be modeled in software, the Applicant submits that modeling hardware in software does not negate patentability. Indeed, a novel and non-obvious circuit of transistors, resistors, inductors and capacitors may easily be modelled in software without negating the patentability of the circuit.

When the Applicant argued, in the telephone interview of April 10, 2008, that the claims are not software because each of the claims is directed to a node, the Examiner indicated that the preamble was not given patentable weight in the 35 U.S.C. §101 assessment. The Applicant respectfully submits that the preamble should be given patentable weight in the 35 U.S.C. §101 assessment. For support of this submission, the Applicant cites a passage from M.P.E.P. 2111.02(I), "Any terminology in the preamble that limits the structure of the claimed invention must be treated as a claim limitation."

Applicant submits that the Examiner has erred in rejecting, as being directed to non-statutory subject matter, claim 22.

The Examiner has rejected claim 22 under 35 U.S.C. §102(e) as anticipated by Zelig.

Claim 22 requires a first forwarder and a second forwarder. The Examiner indicates that "the figure has at least two routers, each of which has a first forwarder logic and second forwarder logic." (last sentence fragment of section 15.) It is unclear which figure in Zelig to which the Examiner is referring in the cited sentence fragment.

FIG. 6 of Zelig illustrates three routers 96, but there is no disclosure of the routers having "a first forwarder logic and second forwarder logic." Furthermore, the virtual bridges 94 and the routers 96 are not disclosed as being connected by pseudo-wires. FIG. 1 of Zelig illustrates three virtual bridges 24, but the structure of a representative virtual bridge 24 illustrated in FIG. 2 only shows a single forwarding engine 34.

Since, the Applicant submits, Zelig does not disclose or suggest an intermediate node in a multihop pseudo-wire comprising a first forwarder for terminating a first pseudo-wire segment and a second forwarder for originating a second pseudo-wire segment as required by claim 22, then Zelig cannot anticipate a node having such a first forwarder and a second forwarder. Applicant submits that the Examiner has erred in rejecting, as anticipated by Zelig, claim 22.

The Examiner has rejected claim 22 under 35 U.S.C. §102(b) as anticipated by Li.

To reject claim 22, the Examiner has cited col. 8, line 19-23 of Li (see above) and col. 2, line 16-30 of Li (see above).

The Applicant submits that the Examiner has not appropriately indicated where Li has disclosed or suggested a node comprising a first forwarder for terminating a first segment of a multihop pseudo-wire as required by claim 22. Similarly, the Examiner has not appropriately indicated where Li has disclosed or suggested a node comprising a second forwarder for originating a second segment of a multihop pseudo-

wire as required by claim 22. Applicant submits that the Examiner has erred in rejecting, as anticipated by Li, claim 22.

### **Conclusion**

In conclusion, the Examiner has failed to establish that claims 21 and 22 are directed to non-statutory subject matter. The rejection of claims 21 and 22 as being directed to non-statutory subject matter is, accordingly, also improper and the Appellant respectfully requests that the Board reverse the Examiner's subject matter-based rejection of claims 21 and 22. Furthermore, the Examiner's rejections of claim 21 and claim 22 under 35 U.S.C. §§ 102(e) and 102(b) fail to establish a teaching, in the references, of every element of the claims. The rejections are, therefore, improper and the Appellant respectfully requests that the Board reverse the Examiner's anticipation rejections of claims 21 and 22.

Respectfully Submitted,  
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(viii) Claims Appendix

21. (rejected) An intermediate node in a multihop pseudo-wire comprising:

a forwarder for:

terminating a first pseudo-wire segment of said multihop pseudo-wire,  
where a description of said first pseudo-wire segment includes, as a  
target, an attachment individual identifier associated with said forwarder;  
and

originating a second pseudo-wire segment of said multihop pseudo-wire,  
where a description of said second pseudo-wire segment includes, as a  
source, said attachment individual identifier associated with said  
forwarder.

22. (rejected) An intermediate node in a multihop pseudo-wire comprising:

a first forwarder for terminating a first pseudo-wire segment of said multihop  
pseudo-wire, where a description of said first pseudo-wire segment includes, as  
a target, an attachment individual identifier associated with said first forwarder;  
and

a second forwarder for originating a second pseudo-wire segment of said  
multihop pseudo-wire, where a description of said second pseudo-wire segment  
includes, as a source, an attachment individual identifier associated with said  
second forwarder.

(ix) *Evidence Appendix*

None.



(x) *Related Proceedings Appendix*

None.